Essays; and I will endeavor here to explain it, & shew what is required, to meet and obviate any alternative that is possible in the case.

It has been remarked that there are four sets of diagonals in a double cancelled truss without uprights, which act independently of each other; being each acted upon by its peculiar set of weights. Of two of these sets, namely, those meeting the upper and lower chords in the centre, the half of each on the right hand, is the counter-part of the half on the left. But, of the other two sets, the half of either, on one side of the centre, is the counter-part of the half of the other, on the opposite side.

Each of the two latter sets, acting alone, manifestly has the centre of gravity of the weights applied at its nodes, nearer to one abutment than to the other, by $\tfrac{1}{6}$ of the length of the truss, in the present case; and it is further manifest, that each wt upon one set, is in equilibrio about the centre of the truss, with a corresponding weight upon the other set; so that, when both are fully loaded, the central pair of diagonals, (composed of one of each set, and crossing in the centre of the truss, vertically and longitudinally,) may be stricken out, and still, corresponding weights upon the two sets of diagonals, will balance one-another respectively, & each abutment be acted on by the whole of all the weights on the same side of the centre with itself.

Hence, the load at lower node 7, instead of bearing with a part of its weight upon each abutment,